

***MACROECONOMIC OUTCOMES AND THE RELATIVE POSITION
OF ARGENTINA'S ECONOMY: 1875-2000***

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Abstract:

This paper attempts to investigate the main factors behind Argentina's economic decline comparing its evolution to that of Australia and Canada.

With this objective, we have constructed a reduced index of economic freedom which captures and summarises the main political macroeconomic outcomes covering the period 1875-2000. After using cointegration and causality techniques, the results obtained show how the macroeconomic policies implemented during this very long period are able to explain the relative evolution, in terms of GDP per head, of Argentina's economy.

Key words:

Convergence, backwardness, economic freedom, cointegration, causality

1.- INTRODUCTION:

Argentina's economic failure has attracted much attention from scholars of economics and history. Attempts have been made to discover when and why a country rich in natural resources, which for some time had enjoyed a similar situation to that of other developed countries, began to fall behind, reaching the extent that we can observe today. The traditional comparison observes the evolution of Argentina's economy alongside that of Australia and Canada, two other countries of new settlement which shared with Argentina a development based on the exploitation of natural resources and the export of primary goods¹.

An in-depth study of the Argentinean historiography leads to the conclusion that there is no clear agreement regarding the precise moment in time at which the country began to fall behind in relative terms. Various dates, including 1913, 1929 and 1950, are put forward. Nevertheless, the use of a more technical and formal system of analysis based on the most recent GDP per capita series for Argentina, Australia and Canada for the period from 1875 to 2000 throws up results which suggest that the rapid catching up process with Australia and Canada came to a halt at the end of the 19th century, the situation remained more or less stable until the late 1930s and a period of clear divergence began in 1974².

A subsequent debate centres on the search for the factors which lie behind this decline. In fact, there is a greater degree of agreement around this debate. What was the reason for Argentina's economic failure and her inability to close the gap with Australia and Canada?

¹ See, for example, Cortés Conde (1997), Di Tella and Zymelman (1967), Díaz Alejandro (1970), Ferrer (1996), Taylor (1992, 1994, 1998a).

² These results are provided by the relative GDP per capita series using the unit root methodology and structural breaks as proposed by Perron and Zivot and Andrews. See Sanz Villarroya (2005).

The neoclassical explanation of growth puts forward an increase, via investment, in capital intensity as the mechanism which leads to higher levels of GDP per person, thus allowing a backward country the chance of converging with richer nations. Nevertheless, as suggested by North (1990, p.137), the accumulation of physical capital depends ultimately on the existence of a set of incentives which originate in the institutions existing at the time, which form the core of the model.

The postulates of the endogenous theory, which states that a country can grow and maintain its relative position if its institutional framework and the policies it applies are geared towards stimulating capital, physical and human investment and innovation, share the same line of thought.

So, whichever theoretical point of view we adopt, in order to analyse a country's growth it will be necessary to take the institutional framework into account as a significant underlying factor. The most important institutions from the point of view of stimulation of economic growth are those which regulate the activity of the economic agents; the reliability of the legal system, the level of efficiency and transparency of the public administration, social values and the macroeconomic policies introduced. More specifically, the macroeconomic policies carried out by governments constitute an important part of the institutional framework as they provide the rules the economic agents have to respect when they invest, produce or consume. Clearly, as is well known, when macroeconomic distortions are maintained over a period of time this has a negative effect on the growth of output. Most of the recommendations made by international bodies with a view to overcoming stagnation in underdeveloped countries centre on macroeconomic reforms aimed at eliminating such distortions.

Authors as important as Di Tella and Zymelman (1967), Solberg (1985), Duncan and Fogarty (1984), Di Tella and Platt (1985), Díaz Alejandro (1985), Taylor (1992,

1994) and Cortés Conde (1994) have highlighted the role of the institutional framework and, more specifically, that of the policies implemented, as the factors behind Argentina's economic failure.

However, while the aforementioned studies address the causes of Argentina's economic failure they attempt neither to quantify these causes nor to measure their impact. Consequently this paper attempts, taking a long term viewpoint, to bring together the results of the main economic policies implemented and see them as a significant element of the institutional framework in order to form an idea of their effects on the nation's economy.

The task is far from simple as, although North's thesis provides us with a clearer analytical structure in which to integrate the institutional analysis into the economy, the difficulty lies in how to measure the institutional context. North himself observes that "*We cannot see, feel, touch, or even measure institutions; they are constructs of the human mind*" (North, 1990, p.107).

As this paper focuses exclusively on the macroeconomic dimension of the institutional framework, it is possible to use a series of variables which reflect the nature of the policies implemented to make this measurement, albeit imperfectly, in a more accurate way. How then can we define and measure the institutional framework in the particular case of Argentina?

In this paper we use a reduced index of economic freedom based on the index created and published by the Fraser Institute since 1996³ to attempt to interpret the path

³ Its principal authors are Gwartney and Lawson although Easterly also collaborated on the last report published for 2006. The first report, published in 1996, covers the periods 1975, 1980, 1985, 1990 and 1995 for a very broad sample of countries. The Heritage Foundation/Wall Street Journal has also published an annual index of economic freedom since 1995, although the Fraser Institute figures are more widely used as they cover a longer period of time.

followed by Argentina in comparison with Australia and Canada⁴. This index consists of a series of macroeconomic variables – including the relative weight of public consumption compared with total consumption, the real depreciation rate of the currency, the level of nominal protection and the difference between the official and the market rates of exchange – and is put together using principal components methodology. Firstly we construct an index for Argentina alone in order to check its appropriateness and secondly a relative index for Argentina *versus* Australia on one hand and a relative index for Argentina *versus* Canada on the other are calculated. The corresponding relative reduced indices of economic freedom for Australia and Canada can then be compared with the situation for Argentina.

The cointegration analyses carried out to compare Argentina's situation with Australia on the one hand and with Canada on the other and the respective relative series of GDP per capita for Argentina indicate that this index lies behind the relative economic evolution of Argentina.

2.- DEFINITION OF THE PROBLEM

Argentina is today a nation emerging from a deep economic crisis. The currently acute situation of stagnation and recession has been present in its economy in differing degrees for decades. It also contrasts sharply with the golden years which Argentina experienced between the end of the 19th century and the beginning of the 20th. At this time, when the nation boasted one of the highest rates of income per capita, no-one would have dared to question her growth potential, to the extent that during this period Argentina's evolution could be compared with the economies of Australia and Canada.

⁴ It is considered to be a reduced index in these three cases as aspects such as the definition of property rights and the regulation of credit, the labour market and business are not included.

Such a comparison is often made because these three countries, at least until the First World War, were typical examples of areas of recent settlement and experienced a spectacular rate of development (Platt and Di Tella, 1985, p. 1). This situation leads Gallo to justify the comparative analysis between Argentina and Australia citing the facts that both countries were transformed under British control, were exporters of primary materials and importers of manufactured goods. Both enjoyed natural resources, were only partially populated, and were large and distant⁵. On the other hand, Duncan and Fogarty develop an analogous approach looking at Argentina and Australia, two countries whose similarities, in their opinion, were evident from the 1880s, a decade of explosive growth up to the moment when Argentina adopted its inward-looking development policies. During this period, Argentina and Australia were evolving on a parallel path even at the level of their economic structure (Duncan and Fogarty, 1984). In all respects, Canada's experience was exactly parallel despite its proximity to and its close relations with the United States of America (Platt and Di Tella, 1985). Up to the beginning of the 20th century these countries can be characterised by their abundant land endowment in relation to capital and labour. Also, in all three cases the development of a capitalist economy integrated in world markets was attained through primary product exports, massive immigration and foreign capital flows, mainly from Europe (Korol, 1991).

However apart from these common characteristics, there were some elements of contrast between the three countries. These are taken into account by the principal authors to explain the different path followed by Argentina from a specific point in time.

When did Argentina begin to fall behind Australia and Canada?

⁵ Around this aspect see, for example, Fogarty, Gallo and Diéguez (1979), Platt and Di Tella (1985) and Duncan and Fogarty (1984).

According to the traditional view which can be drawn from the Argentinean historiography, this country was able to reduce the gap with Australia and Canada until 1913 as argued by Taylor, until 1929, as maintained by Díaz Alejandro, and even up to 1950, in the opinion of Cortés Conde.

If we took the cross section data used by these authors and argued in terms of neoclassical economic theory when analysing the process of convergence, we would probably reach conclusions very similar to theirs. However, given that convergence processes are of a long term nature, we know that cross section data are of little use in such studies. Therefore, following the idea and method proposed by Greasley and Oxley (1998), we will consider time series data in order to establish the exact date at which Argentina's growth path separated from that of Australia and Canada and to observe the characteristics of the catching up process at the time.

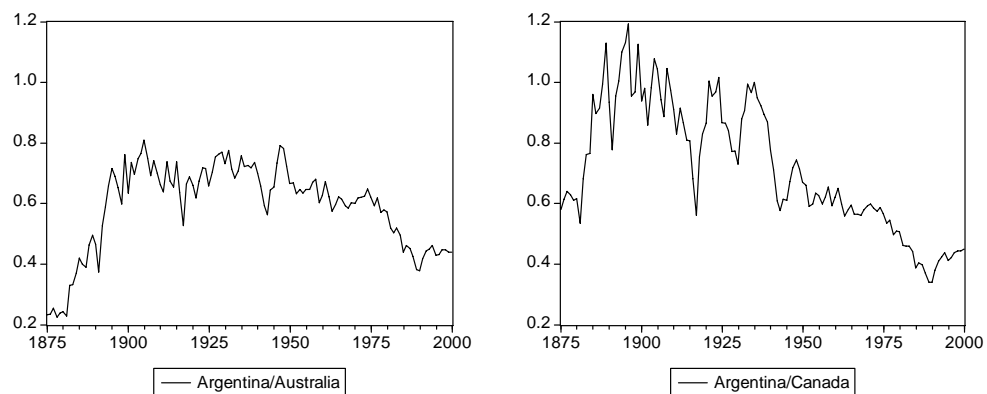
Fortunately, we can now use Cortés Conde and Maddison's new and very extensive GDP per head series, which allow us to employ an empirical approach based on time series data. This kind of data will help us to see the whole process of catching up and convergence more clearly and to use the most recent technique for time series data. We have decided to use de Maddison's series because they are taken into consideration in some of the studies about growth. Nevertheless these series have a problem related to be expressed in relative constant prices of 1990, a benchmark very far from our starting year. In order to mitigate this problem we have used purchasing power parity adjusted GDP per capita expressed in 1913 US relative prices for the period 1875-1939, and 1980 US relative prices for the period 1940-2001⁶. The levels of

⁶ This procedure attempts to mitigate the index number problem caused by using real product per capita series expressed in relative prices of a distant benchmark year. This is the case with Maddison's *World Economy* figures in 1990 dollars, which are normally used in this type of comparison. Nevertheless, the use of Maddison's data does not significantly change the results (Sanz-Villarroya (2005)).

real product per person for 1913 and 1980 are taken from Prados de la Escosura (2000). The volume indices used to project these benchmarks back and forth over for the whole period are taken from Maddison (2003), except for the period 1875-1935 in Argentina, for which we used Cortés Conde and Harriague's GDP reconstruction (1996). However, that reconstruction have been criticized by Della Paolera and Taylor (2003) elaborating another different re-estimation of the Argentinean GDP series. In the analysis presented in this paper we have taken into account this new possibility too making the same adjustment exposed before. Nevertheless, and as we can see later, the outcomes obtained do not differ from that extracted after considering the Maddison's series and it is for that we have finally chosen them. Obviously, as this is a long-run analysis it is centred in the trends of the series, so the possible changes in levels that emerge from these adjustments commented before do not have influence at all, despite of the use of them can serve to check the robustness of our analysis.

The relative performance of Argentina in terms of GDP per person compared with that of both Australia and Canada is illustrated in the following graphs.

Graph 1: Evolution of the relative series for Argentina's GDP per person compared with Australia and Canada: 1875-2000 (relative values):



Source: Maddison (1997, 2003)

In the case of the comparison with Australia, despite the fact that Argentina never matched her levels of GDP per capita, there was a rapid closing of the gap between the two countries until 1899. From this year onwards Argentina's relative position stagnated until 1945, after which the gap began to widen. This trend became clearer after 1974, the year when the difference between these two countries began to grow more rapidly.

We can also deduce that after 1896 the rhythm of growth which was bringing Argentina closer to Canadian levels began to slacken. Nevertheless, as can be observed on the previous graph, between this year and 1936 there were times when Argentina's GDP per capita overtook that of Canada⁷. In the case of comparison with Canada, the year 1974 also marks the point at which divergence became a reality.

Why did Argentina never achieve Australia's levels of per capita output? If Argentina was able to overtake Canada, why was she unable to maintain this relative position?

The origins of Argentina's economic failure have received much attention. According to Di Tella and Zymelman (1967), the closing of the borders was the largest difference between Argentina and other areas of recent settlement, insofar as alternatives to compensate for the end of territorial expansion were not sought. For Solberg (1987), the fundamental difference between Argentina and Canada lay in the policy of land distribution – in Canada the result was a large number of small farmers while in Argentina there was a small number of large landowners. The contrast between Australia's stable and flexible administrations and the bad government suffered by Argentina is, according to Duncan and Fogarty (1984), the key factor. For Platt and Di Tella (1985), Argentina's political tradition and immigration from other geographical areas were to blame. The latter is also mentioned by Taylor (1994) and Díaz Alejandro

⁷ The econometric results can be consulted in Sanz Villarroya (2005).

(1970) goes further stating that immigration policies, which were more restrictive in Australia, would have led to increased productivity encouraged by the relative scarcity of labour⁸.

Taylor (1992), in an original work of research, points out that Argentina's relative economic failure, he identifies the 1913 as its initial year, can be explained by the combination of a higher rate of dependence and the late demographic transition experienced by this country in comparison with Australia and Canada. This situation may have held back capital formation in Argentina and, consequently, the country's economic growth to the extent that she fell behind Australia and Canada. Obviously, this low savings rate and the fact that Argentina was dependent on foreign capital meant that the situation grew worse following the First World War when the flow of money from abroad slowed down (Taylor, 1992: 925).

Cortés Conde (1985) notes that, in the 1920s, the policy of industrialization via import substitution constituted the main characteristic of divergence in contrast with Canada's policy of 'open doors' development. Taylor (1994, 1998a) agrees, pointing out that capital accumulation was made increasingly difficult from the 1930s onwards by the high relative price of capital goods (which were mostly imported), the result of the industrialization via substitution of imports. Multiple exchange rates, the illegal currency market, the depreciation of the currency and high import tariffs were the factors underlying the high relative price of capital goods (Taylor, 1998b; Collins and Williamson, 2001). The consequent lower rate of capital intensiveness would explain Argentina's lower labour productivity in comparison with Australia and Canada and therefore her lower rates of growth. Thus the policy mix implemented was, in the final

⁸ Cf. Timmer and Williamson (1998) on the different migration policies followed in 'new settlement regions'.

analysis, responsible for Argentina's historic economic backwardness (Cortés Conde, 1998).

3.- THE CAUSES OF ARGENTINA'S ECONOMIC FAILURE: THE INDEX OF ECONOMIC FREEDOM:

Why did Argentina, a country which had figured among the ten wealthiest in the world in terms of per capita income until the early 20th century, fall behind to the extent which is evident today? Why was she unable to catch up with Australia and Canada for longer? Where is the origin of the problem to be found? Given the unanimous agreement observed in the previous section identifying the institutional framework and the economic policies carried out as the real causes of Argentina's situation, the question hinges on finding a synthetic way to measure the impact of these factors.

Since the 1990s, research has been carried out into the set of incentives which condition the behaviour of the economic agents in market economies with a view to obtaining quantitative indicators of economic freedom. The Fraser Institute, in the different versions of *Economic Freedom of the World* has worked towards the construction of an index of economic freedom based on objective components which reflect the presence or absence of economic freedom and includes 21 components or indicators which reflect the coherence of institutional agreements and economic policies⁹.

Gwartney and Lawson (2003), the creators of this index, observe that institutions and policies are compatible with economic freedom when they provide an appropriate structure for voluntary exchange, freedom to compete and protection for people and property. They go on to add that governments should limit their scope of action and focus on their main task: protecting private property and guaranteeing the enforcement

⁹ See Gwartney and Lawson (2001). Other studies which deal with this topic include those of Carlsson and Lundström (2002), Dawson (2003) and Heckelman and Stroup (2005).

of contracts. On the contrary, economic freedom would decrease if the government interfered too much in economic matters, increasing its expenditure, controlling or imposing excessive taxes on the economy (Gwartney and Lawson, 2003, pp. 406-408).

North (1990), Scully (1992) and De Soto (1989), among others, have also highlighted the importance of the institutions and related political variables as causes of a nation's economic performance. In the same line, the new growth theory underlines the role of rule of law, security of property rights, enforcement of contracts, monetary and price stability, free trade, open markets and a limited government role as the keys for economic progress (see Knack and Keefer (1995), Barro (1996), Barro and Sala-i-Martin (1995)).

In fact, the index of economic freedom calculated by the Fraser Institute includes the main components of all the elements highlighted in the new growth theory and outlines five broad areas: Size of Government, Legal Structure and Security of Property Rights, Access to Sound Money, Freedom to Exchange with Foreigners and Regulation of Credit, Labour and Business.

Due to measurement problems and lack of statistical information, we will consider a much less ambitious index which although it can be seen as a reduced version, takes into account the corresponding part of the main results for policies implemented at each moment in time¹⁰. In other words, this study will not include the parts of the index which refer to legal structure and security of property rights or the regulation of credit, labour and business¹¹. The index calculated here is, therefore, closer

¹⁰ Della Paolera, Irigoin and Bózzoli (2003) made a similar study. They constructed an index of macroeconomic and fiscal pressure for Argentina although the methodology used is different from that applied in the current study. Average calculations for each term of office were made which makes it impossible to observe continuous changes over time.

¹¹ See Prados de la Escosura and Sanz-Villarroya (2006) for a more detailed study which includes the degree of definition of property rights, the degree of distribution of wealth and the degree of separation of powers in addition to the reduced index of economic freedom.

to Gwartney and Lawson's initial version which did not include aspects related with the security of property rights and regulatory restraints (De Haan, 2003, p.396).

Elements which make up the 'reduced' index of economic freedom [henceforth the RIEF] calculated here include, firstly, public consumption (G_i) as a proportion of total consumption ($G_i/(G_i+C_i)$), where C_i represents private consumption. This variable attempts to take the place of Size of Government given that, despite the fact that the Fraser Institute's index includes other items such as transfers and subsidies, government-owned companies and the top marginal tax rate, this historical information is not available in the case of Argentina.

In line with the previously mentioned work of reference we will assume that when government spending increases relative to individual spending, decisions taken by the government are replaced by personal choice and economic freedom decreases (Gwartney and Lawson, 2003, p.411).

What is more, 'depreciation in the real value of money', ($Infla/100+Infla$) where $Infla$ is the percentage rate of inflation, is included in the RIEF. This variable attempts to represent Access to Sound Money in Gwartney and Lawson's index and would be interpreted in the same way. A high rate of inflation implies an absence of sound money and undermines gains from trade. Moreover, high rates of inflation distort relative prices and alter the fundamental terms of long-term contracts leading to a decrease in economic freedom (Gwartney and Lawson, 2003, p.414).

Weighted nominal protection ($Tariff$), measured as the proportion of customs income to the total value of imports and the deviation of the official exchange rate from the market rate (the difference in logarithms) which is referred to as 'black market' ($Black$) are two variables seen as representative of Freedom to Exchange with Foreigners. Obviously, international trade is positive as it provides a significant impulse

to economic growth and the standard of living. Nevertheless, tariffs clearly restrict international trade and therefore economic freedom. Exchange rate controls and the related *black market* problems, insofar as they reduce the convertibility of money, hold back both trade and economic freedom (Gwartney and Lawson, 2003, p.415).

Once the components of the index have been selected, the next problem is to decide how to incorporate them. Unfortunately, economic theory does not specify a model for the construction of indices of economic freedom and consequently the principal components method is frequently used in this type of study. Principal component analysis assigns weights on the basis of the distributions and interrelations between the various components.

This methodology, however, is not perfect and has been the object of varied criticism. Some critics are of the opinion that it fails to reflect a conceptual link between the theory behind the selection of elements and the index itself. Others observe that the results are sensitive to the scale of measurement of the different variables under consideration and highlight the ambiguity involved in the interpretation of the results. Finally, it is argued that this methodology assigns lower weights to variables which are highly correlated with others (Heckelman (2005), p. 957).

However, this article, while acknowledging the problems involved with the proposed method, has used factorial analysis based on the principal components method to construct the RIEF in the belief that these problems are minimal in this particular case. On the one hand, and as has previously been mentioned, there is no underlying economic theory which deals with the calculation of an index of economic freedom and, therefore, principal components analysis cannot contradict such a theory. On the other hand, the variables have been standardized with the object of minimizing the problem of sensitivity to the scale of measurement. Additionally, in order to avoid the problem of

ambiguity in the interpretation of the results obtained, an additional analysis will be carried out later to check which are the most important variables during each period (these results are included in the Appendix). Finally, the last of the aforementioned criticisms, which referred to problems caused by high levels of correlation between the variables, is also minimized by considering the correlation matrix. An observation of this matrix shows that the correlations are high enough to justify the use of principal component methodology but not high enough to cause this problem (see Appendix).

The results obtained from the application of the methodology described are presented in Table 3. The variables under study have positive weightings in the first component. This indicates that they are inversely associated with economic freedom. Each of them has subsequently been multiplied by -1 in order to obtain the components of the ‘reduced index of economic freedom’ (RIEF). Finally, the RIEF has been obtained as a linear combination of each of these variables, where the values assigned by factorial analysis for each component as a proportion of its total value have been used as the respective weightings¹².

The results of the principal components analysis and the graph of the index obtained are as follows:

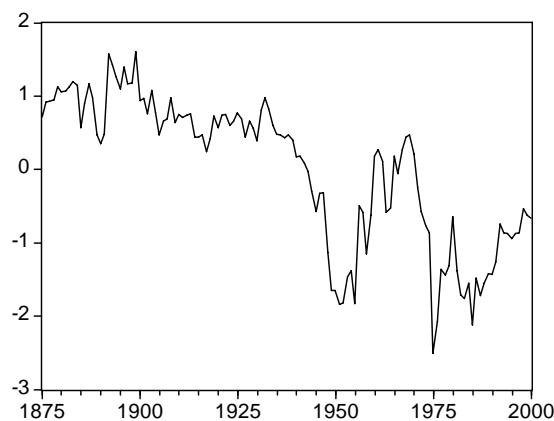
¹² These weightings are: 0.594 for $Gi/(Gi+Ci)$, 0.527 for $INFLA/(100+INFLA)$, -0.573 for $Tariff$ and 0.450 for $Black$. The percentage of the variance accounted for the first component is of about 55%.

4.- THE CONSTRUCTION OF THE INDEX OF ECONOMIC FREEDOM:

Table 3: Principal Components Analysis to obtain the RIEF:

	Public consumption/total consumption	Depreciation in the real value of money	Nominal protection	'black market'
Factor 1	0.825	0.733	-0.795	0.626

Graph 2: Reduced Economic Freedom Index in Argentina: 1875-2000



Is the evolution of the index in relation with the real historical facts?

Looking at RIEF, we observe, in first place, a period from 1875 until the end 1890s, during which the index increased. During this period there were few macroeconomic shocks despite the expansive nature of both monetary and fiscal policies as confirmed by the high values of RIEF. Argentina was on the gold standard and even when the convertibility of the peso was suspended between 1885 and 1899, the monetary authorities continued to operate within the rules of the gold standard¹³. The high level of trade openness coherent with laissez faire policies was accompanied by the inflow of capital, which explains the current account deficit and the increase in public spending¹⁴. All of these facts are coherent with the results obtained in the

¹³ In 1887, the Law of Guaranteed Banks (la Ley de Bancos Garantizados) was passed which stated that all currency issues were to be backed by gold (della Paolera, 1994, p. 567).

¹⁴ Cf. Bethell (1993). It seems that fiscal policy was so expansive that, between 1885 and 1893, the public deficit was large and persistent, so much so that, as from 1888, the federal government had to seek

Appendix 1 in which we can see that *Infla* and *Tariff* are the variables with a more correlation and impact in this period, the first one acting positively and the second negatively.

This phase was interrupted by the Baring crisis. The Baring crisis can be explained, according to della Paolera and Taylor (2001) as the conflict between a high fiscal deficit, the impossibility of maintaining a constant exchange rate and a poorly regulated banking system. According to these authors, the lack of co-ordination between monetary policy and fiscal policy was the factor which, in the final analysis, caused the crisis and led to the collapse of the banking system¹⁵. Logically, this situation led the RIEF to a marked decrease.

The turn of the century signalled the beginning of a period which lasted until the middle of the 1930s in which despite of the fiscal policy maintained its expansive way, the monetary policy adopted a more restrictive character. For this reason we see that $Gi/(Gi+Ci)$ is the variable with a more negative impact in this period (see Table A.2 in the Appendix 1). Moreover, one of the most important characteristics of this period is the fact that, between 1890 and 1935 Argentina was anchored to the currency board due to the Caja de Conversión whose principal mission was to guarantee the currency's value abroad¹⁶. In addition, a restrictive monetary policy, reflected in high interest rates, was implemented¹⁷. The free trade policy continued more or less unchanged until the crisis of the 1930s. In fact, *Tariff* has a positive impact and is the more correlated

additional forms of income to cover these deficits (della Paolera, 1994, p. 564). Taylor and Williamson (1994) noted that the attraction of foreign capital, mostly British, increased as a result of the low savings rate caused by a high dependency rate.

¹⁵ According to Della Paolera and Taylor (2001), initially the crisis showed the typical symptoms of a traditional banking crisis, that is an increase in the amount of cash in the hands of the public, an increase in the banks' reserves-deposits ratio and the elimination of some financial institutions, which meant the destruction of deposits. Cf. della Paolera and Taylor (2001). p. 68.

¹⁶ The return to the gold standard took place in 1899 and, despite leaving it again in 1900, 1914 and 1929, the monetary authorities continued to act within its rules (della Paolera and Taylor, 1998, p. 12).

¹⁷ della Paolera and Taylor (1998), p. 3 and della Paolera and Taylor (2001), p.31. Cf. also Homer and Sylla (1996), pp. 626-29.

variable with RIEF in this phase (see Table A1.2 in the Appendix 1). This situation was reflected by consistently high levels of the RIEF¹⁸.

RIEF decreased in the years following 1935, although its values were still high for another decade. This decrease is associated with changes in macroeconomic policy. The public sector implemented a policy of balance after the Depression, which required new sources of income and reductions in spending¹⁹. Nevertheless, the change in trade policy would also play its part²⁰. Exchange controls were introduced and the peso was significantly devalued more than once after the devaluation of the pound in 1931. Quantitative restrictions were also introduced at this time (Alhadeff, 1986, p.104). The fact that *Black* is the variable with the more power explanation and correlation in this period supports this affirmation and the gradual decrease of the RIEF is a clear consequence of these events.

Perón's arrival in 1945 and two consecutive terms of office coincide with a fall of RIEF. Early Peronism was a period of macroeconomic shocks during which the strategy of import substitution industrialisation (ISI) was implemented. Bilateral trade, exchange control and multiple exchange rates were its most important characteristics (Rock, 1988). There was also an increase in the role of the state which is reflected in the increase in state-owned property, interventionism and higher levels of public spending, mainly financed by the inflationary tax (Di Tella and Dornbusch, 1989, chap.4). The expansive macroeconomic policy, which aimed at the redistribution of wealth and the increase of spending, led to high rates of inflation.

¹⁸ According to O'Connell there were few changes in trade policy, while the rest of the world returned to protectionism. During the 1920s Argentina continued its free trade policy as a producer of staple goods. The main change was the increase in tariffs from 25% to 60% of the official 'aforo' values in 1923. O'Connell(1986), p. 91. Cf. Di Tella (1986), pp. 122-123.

¹⁹ According to della Paolera and Taylor (1998, p. 10), the effects of the fiscal decisions taken could have led to contraction until 1935 and it cannot be said that a New Deal type policy was practised.

²⁰ For Di Tella, the 1930 crisis was the watershed between free trade and protection in Argentina, although the main change came after the Second World War. Di Tella (1986), p. 128.

RIEF recovered in the period between 1953 and 1973. This period saw a policy change which included trying to deal with the problems of inflation, public deficit and foreign debt, as well as attempts to open the economy. Nevertheless the success of this measures were not enough and for that RIEF was going up without achieving the levels of the interwar years. Maybe for that *Black* continues being the variable with the most negative impact despite of *Tariff* are acting as the more positive powerful variable in this period (see table A1.2 in the Appendix 1).

Perón's second term of office was characterised by an expansive monetary policy, which resulted in an uncontrolled rise in the level of inflation²¹. Faced by hyperinflation and rates of interest which were, in reality, negative, the financial reform of 1977 only achieved short-lived success, which was interrupted by the 1980 crisis²². Attempts to control the hyperinflation and carry out fiscal reform in 1983 and the following years resulted in another failure. This situation corresponds with a slump of RIEF. For this reason we can see *Infla* as the main powerful variable in this period with a negative impact (see table A1.2 in the Appendix 1). RIEF would only recover in the 1990s when the Menem government brought the hyperinflation under control, established a fixed rate of exchange and introduced a process of economic deregulation.

Summing up, RIEF appears to reflect the results of the macroeconomic policy implemented in Argentina. We have to check if these outcomes could affect the relative position of the argentine economy with that followed by Australia and Canada.

For that we have constructed two respective relative indexes, one for the relative case of Argentina respect to Australia and other for the relative case of Argentina respect to Canada. These relative indexes have been constructed using the same variables used for the RIEF in Argentina but, in this case they are taken as differences

²¹ Inflation reached 900% between 1975 and 1976. Cf. Di Tella and Dornbusch (1989).

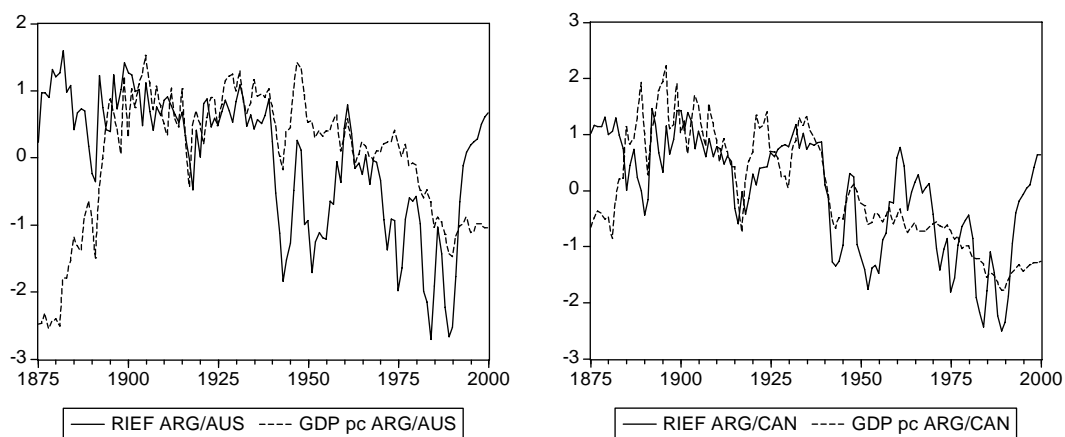
²² The Central Bank had to take control of 60 institutions in this year. Cf. Gerchunoff and Llach (1998), pp. 358-360.

between its value in Argentina respect to the value they take in Australia and Canada respectively.

These results are presented in the following section.

5.- ECONOMIC FREEDOM AND THE POSITION OF ARGENTINA RELATIVE TO AUSTRALIA AND CANADA.

Graph 3: Joint evolution of the relative position of the Argentinean economy and the relative Reduced Index of Economic Freedom in Argentina vs Australia and Canada: 1875-2000



Where GDP pc ARG/AUS is Argentina's GDP relative to that of Australia, RIEF ARG/AUS is the reduced index of economic freedom for Argentina compared with that of Australia. GDP pc ARG/CAN and RIEF ARG/CAN represent the same for Argentina compared with Canada.

These graphs suggest a correlation between Argentina's position compared with Australia and Canada in terms of GDP per capita and the relative evolution of the RIEF.

We can, therefore, attempt to discover the relationship between the variables represented in the previous graphs; that is, between the relative series for Argentina's GDP per capita compared with that of Australia with the respective relative Argentinean RIEF (RIEF ARG/AUS) on the one hand, and, on the other hand, between

the relative series for Argentina's GDP per capita compared with that of Canada and the respective relative RIEF (RIEF ARG/CAN).

Initially, this means that we have to establish a cointegration relation between each of these pairs of variables and then to check how the causality between them operates. We will begin by analyzing the order of integration of the variables.

Table 4: Order of Integration of the Variables²³:

	ADF levels	PP Levels	ADF initial differences	PP initial differences	Order of Integration
GDP pc Argentina relative to Australia	-2.646	-2.497	-13.178*	-13.392*	I(1)
GDP pc Argentina relative to Canada	-1.804	-1.745	-12.095*	-12.285*	I(1)
RIEF ARG/AUS	-2.617	-2.546	-10.769*	-11.796*	I(1)
RIEF ARG/CAN	-2.551	-2.535	-9.776*	-9.988	I(1)

* Indicates rejection of the null hypothesis which maintains the existence of a unit root at 1% significance.

Dickey-Fuller and Phillips-Perron tests inform us that the variables follow a process I(I) so a long-term cointegration relation between them can be established.

The long-term relation discovered in Argentina's GDP per capita relative to that of Australia with the respective RIEF after estimating for LS (Least Squares) is as follows:

$$\text{Relative GDP pc} = -3.330 + 0.0003 * T + 0.029 * \text{RIEF} + e_t; \quad R^2\text{-adj}=0.427; F=43.272; AIC=-2.071$$

(-3.020) (3.589) (6.871)

Where T represents the trend variable and the t-ratios are expressed in brackets and e_t represents the residuals.

²³ Tests applied on the assumption of a model without a constant and a trend and taking the adequate number of lags into account.

The ADF test established on these residuals (e_t) in order to contrast the null hypothesis, which states that cointegration between the two variables does not exist, allows us to reject it up to a figure of 5% significance, given that the value is -2.476 which is greater than the -1.943 which is the critical value at this level of significance. Consequently we observe that the long-term relation is stable, meaning we can establish the error correction model which allows us to detect the direction in which causality between the two variables is operating. To this end, the following equations are created using LS:

$$\Delta GDP_{pc,t} = \alpha_1 + \alpha_{GDP_{pc}} e_{t-1} + \sum_{i=1} \alpha_{11}(i) \Delta GDP_{pc,t-1} + \sum_{i=1} \alpha_{12}(i) \Delta RIEF_{t-1} + \varepsilon_{GDP_{pc},t}$$

$$\Delta RIEF_t = \alpha_2 + \alpha_{RIEF} e_{t-1} + \sum_{i=1} \alpha_{21}(i) \Delta GDP_{pc,t-1} + \sum_{i=1} \alpha_{22}(i) \Delta RIEF_{t-1} + \varepsilon_{RIEF,t}$$

In this sense we can say that relative $\Delta RIEF$ does not cause relative ΔGDP_{pc} in Granger's sense if $\alpha_{GDP_{pc}}$ is zero and all $\alpha_{12}(i) = 0$. Similarly, relative ΔGDP_{pc} will not cause $\Delta RIEF$ if $\alpha_{RIEF} = 0$ and all $\alpha_{22}(i) = 0$.

Thus, the Wald test applied in order to check the joint significance of the coefficients $\alpha_{GDP_{pc}}$ and $\alpha_{12}(i) = 0$, indicates that the null hypothesis which states that all these coefficients are zero can be rejected.

$$\begin{aligned} \text{Wald test (1)} \quad & \text{Ho: } \alpha_{GDP_{pc}} = \alpha_{12}(i) = 0 \\ & \text{F-stat.} = 4.648^* \text{ (critical value} = 3.96) \\ & \text{Chi-sq.} = 13.945^* \text{ (critical value} = 12.84) \end{aligned}$$

Nevertheless, the Wald test applied to the second equation does not make it possible to reject the hypothesis which states that $\alpha_{RIEF} = 0$ and $\alpha_{22}(i) = 0$.

$$\begin{aligned} \text{Wald test (2)} \quad & \text{Ho: } \alpha_{RIEF} = \alpha_{22}(i) = 0. \\ & \text{F-stat.} = 1.343 \text{ (critical value} = 3.96) \\ & \text{Chi-sq.} = 4.031 \text{ (critical value} = 12.84) \end{aligned}$$

Consequently, in line with all the previous results, it has been proved that the RIEF of Argentina with respect to Australia lies behind Argentina's relative position in terms of GDP per capita, but that the opposite is not true. The cointegration relation between the two variables then, is from relative RIEF to relative GDP per capita.

Similarly, the same operation for the relation between Argentinean GDP per capita relative to that of Canada and the respective relative RIEF provides the following results.

The LS estimate between the two variables offers the following long-term relation.

$$\text{Relative GDP pc} = -7.287 - 0.003 * T + 0.059 * \text{RIEF} + U_t; \quad R^2\text{-adj}=0.619; F=101.969; AIC=-1.196$$

(8.475) (-7.639) (3.680)

The ADF test applied to the residuals of this equation gives a value of -3.999, higher than the -2.884 which corresponds to the critical value at 5% significance. We can, therefore, reject the null hypothesis at 5% concluding that, once again, there is a stable, long-term relation between these variables. What is more, the causality analysis carried out between the variables under consideration once again shows that Argentina's position relative to Canada in terms of GDP per capita is caused by the relative RIEF as shown by the following results:

Wald test (1) $H_0: \alpha_{\text{GDPpc}} = \alpha_{12}(i) = 0$
F-stat.= 4.474* (critical value=3.96)
Chi-sq.= 17.896* (critical value=12.84)

Nevertheless, the Wald test applied to the second equation does not allow us to reject the hypothesis which states that $\alpha_{\text{RIEF}}=0$ and $\alpha_{22}(i)=0$.

Wald test (2) $H_0: \alpha_{\text{RIEF}} = \alpha_{22}(i) = 0$.
F-stat.= 0.742 (critical value=3.96)
Chi-sq.= 2.971 (critical value=12.84)

It seems clear that, from a long-term historical viewpoint, it has been proved that the set of macroeconomic policy results represented in our reduced index of economic freedom has been the cause of Argentina's economic position with respect to Australia and Canada. We can see in Appendix 3 how the use of the alternative estimated series from Maddison and Cortés Conde or Della Paolera and Taylor leads to the same conclusions, the economic freedom is causing the relative position of the Argentine economy, something that gives robustness to our analysis.

If we look at the information included in Appendix 2, relating to the impact and correlation that each of the components of the respective relative indexes presents, we can observe that, in general terms, *Infla* and *Black* appear as the main differences between Argentina and the other two countries of new settlement. The impact of both variables is negative along the whole period under consideration increasing its intensity after 1933. More specifically, *Black* presents the higher explanatory power between 1953 and 1973 while *Infla* acquires significance during the period 1974-2000, which involves the phase of hyperinflation. The same importance plays this variable during 1875-1899 but in this case with less impact and virulence.

On the contrary, we can observe that the proportion of government consumption over total consumption appears with a strong and positive impact all the time between 1875 and the year 2000 when comparing the case of Argentina with Australia and Canada. This variable has a higher value in these last countries with a proportion of 16,20% and 19,22% respectively *versus* the 13,23% of Argentina. The differences are more remarkable during 1933-1952 where the respective proportions are 17,42% and 19,41% in Australia and Canada and it is only of about the 13,41% in Argentina and the gap is increasing with time.

In the same way, the variable *Tariff* is another which is acting positively in the long-run presenting a negative, but a reduced, correlation during the phase 1933-1952 only and just in the comparative case of Argentina with Australia. For the whole period Argentina has a ratio of tariff revenue over imports of 16,52%, similar to that of Australia of 16,22% and a bit higher than for Canada of about 11,98%. Nevertheless, this variable has a positive impact because its proportion is reducing with time, at least until 1952. For example, during 1875-1899 Argentina exhibited a ratio of 24,08% in contrast with the 18,83% and 18,90% of the other two economies.

However, during the periods 1900-1932 and 1933-1952 the values of 17,96% and 15% respectively for Argentina are contrasting clearly with the percentages of 20,82% and 21,90% for Australia in these same periods. For Canada, on the contrary, these values are similar to the Argentina's (16,75% and 11,31%). Finally, during 1953-1973 and 1974-2000, the values for *Tariff*, while decreasing, are on average a bit higher in Argentina than those for Australia and clearly higher than those for Canada.

All these results are in connection with the ideas of Collins and Williamson for which the protection in Latin America was higher before the Great Depression than after. Moreover, in contrast with other analysis, the degree of protection in the region was not higher than in other development areas.

From the ideas presented in this paper we can extract that other ways of protection, different from tariffs, such as devaluation of money and distortions in exchange rate, were what marked the contrast between Argentina and Australia and Canada. The abuse use of them would have lowered the degree of economic freedom in this country making impossible to advance in economic terms and situating the economy in a position of continuous backwardness.

Clearly, although the present study leaves some questions unanswered and invites an even more rigorous analysis which would require the construction of a more complete index of economic freedom, including aspects related with the definition of property rights, the legal structure and regulation, this is a more ambitious project beyond the limitations of this paper which can serve to encourage future research in this line.

6.- CONCLUSIONS:

Scholars in the fields of Argentinean economics and history have spent a lot of time researching the reasons behind the nation's loss of economic ground compared with other developed countries, especially Australia and Canada, countries which have traditionally been considered alongside Argentina. A study of the Argentinean historiography leads to the idea, shared by most of the scholars, that the institutional framework in place was inappropriate and did not help the nation's economic development.

Nevertheless, despite the existence of a broad range of literature in the field, this question has not so far been approached from a formal, analytical point of view. The objective of this paper is to fill this gap. In order to do so a reduced index of economic freedom which summarizes the results of the main economic policies applied and attempts to reflect Argentina's institutional framework between 1875 and the present has been constructed.

The cointegration analysis carried out between this index for Argentina relative to Australia and Canada and the respective series of relative Argentinean GDP per capita lead us to the conclusion that Argentina's comparative economic performance may have been shaped and caused by the different level of economic freedom present in this country throughout the period under consideration.

Consequently, this study identifies macroeconomic results as being responsible for Argentina's economic failure and her relative loss of ground.

APPENDIX 1:

Table A1.1: Matrix correlation between the variables included in the RIEF:

	BLACK	TARIFF	INFLA	Gi/(Gi+Ci)
BLACK	1.000	-0.392	0.226	0.365
TARIFF	-0.392	1.000	-0.426	-0.522
INFLA	0.226	-0.426	1.000	0.521
Gi/(Gi+Ci)	0.365	-0.522	0.521	1.000

Table A1.2: Impacts of the most important variables of RIEF during each period:

Impacts (change in a standard deviation)

	BLACK	TARIFF	INFLA	Gi/(Gi+Ci)
1875-1899	0	0.205	-0.186	-0.088
1900-1932	-0.019	0.2868	-0.100	-0.193
1933-1952	-0.367	0.307	-0.120	-0.183
1953-1973	-0.351	0.314	-0.142	-0.250
1974-2000	-0.213	0.202	-0.398	-0.316

Correlation with RIEF by periods

	BLACK	TARIFF	INFLA	Gi/(Gi+Ci)
1875-1899	0.000	0.891	-0.911	-0.013
1900-1932	-0.022	0.633	-0.364	0.135
1933-1952	-0.909	0.912	-0.825	-0.813
1953-1973	-0.847	0.784	0.064	-0.484
1974-2000	-0.662	0.268	-0.776	-0.210

APPENDIX 2:

Table A2.1: Principal Components Analysis for the relative RIEFs:

Panel A: Argentina vs Australia²⁴:

	'black market' (DBlack)	Protección nominal (DTariff)	Depreciación del valor real del dinero (DInfla)	Consumo público/Consumo Total D(Gi/Gi+Ci)
Factor 1	-0.521	0.273	-0.759	0.672

Where D means the difference between the values for this variable in Argentina respect to its values for Australia

Panel A: Argentina vs Canadá²⁵:

	'black market' (DBlack)	Protección nominal (DTariff)	Depreciación del valor real del dinero (DInfla)	Consumo público/Consumo Total D(Gi/Gi+Ci)
Factor 1	-0.527	0.387	-0.735	0.712

Where D means the difference between the values for this variable in Argentina respect to its values for Canada.

Sources:

Australia: B. R. Mitchell, *International Historical Statistics: Africa, Asia and Oceanía: 1870-1993*, (New York, 1998); W. Vamplew, *Australians: Historical Statistics*, (Canberra, 1987); Reserve Bank of Australia, 'Australian Economic Statistics 1949-1950 to 1996-1997', *Occasional Paper*, n° 8 (on –line version)

Canadá: B. R. Mitchell, *International Historical Statistics: The Americas: 1870-1993*, (New York, 1998), Statistics of Canada (2004); FMI (several numbers).

²⁴ The weights for the variables are: -1.555 for *DBlack*, 0.814 for *DTariff*; -2.265 for *DInfla* and 2,006 for *D(Gi/Gi+Ci)*.

²⁵ The weights for the variables are: -3.233 for *DBlack*, 2.374 for *DTariff*; -4.509 for *DInfla* and 4.368 for *D(Gi/Gi+Ci)*.

Table A.2.2: Impacts of the most important variables of relative RIEFs during each period:**Panel A: Argentina vs Australia:****Impacts (change in a standard deviation):**

	DBLACK	DTARIFF	DINFLA	DGi/(Gi+Ci)
1875-1899	0	0.063	-0.273	0.085
1900-1932	-0.018	0.068	-0.135	0.1793
1933-1952	-0.326	0.063	-0.137	0.682
1953-1973	-0.316	0.0927	-0.186	0.261
1974-2000	-0.216	0.042	-0.511	0.212

Correlation with relative RIEF by periods

	DBLACK	DTARIFF	DINFLA	DGi/(Gi+Ci)
1875-1899	N.A.	0.682	-0.863	0.430
1900-1932	-0.203	0.508	-0.349	0.855
1933-1952	-0.432	-0.457	-0.483	0.725
1953-1973	-0.710	0.734	0.012	0.146
1974-2000	-0.446	0.277	-0.903	0.508

Panel B: Argentina vs Canada:**Impacts (change in a standard deviation):**

	DBLACK	DTARIFF	DINFLA	DGi/(Gi+Ci)
1875-1899	0	0.458	-0.332	0.056
1900-1932	-0.015	0.470	-0.109	0.192
1933-1952	-0.293	0.418	-0.190	0.467
1953-1973	-0.286	0.576	-0.227	0.247
1974-2000	-0.175	0.330	-0.653	0.166

Correlation with relative RIEF by periods

	DBLACK	DTARIFF	DINFLA	DGi/(Gi+Ci)
1875-1899	N.A.	0.828	-0.904	0.354
1900-1932	-0.012	0.905	0.212	0.905
1933-1952	-0.557	0.719	-0.478	0.560
1953-1973	-0.747	0.777	0.072	0.238
1974-2000	-0.441	0.211	-0.902	0.653

APPENDIX 3: Cointegración análisis for the relative RIEFs and the alternative relative GDP per head series:

Gráfico A3.1: Relative RIEFs and GDP per head series evolution (normalised date):

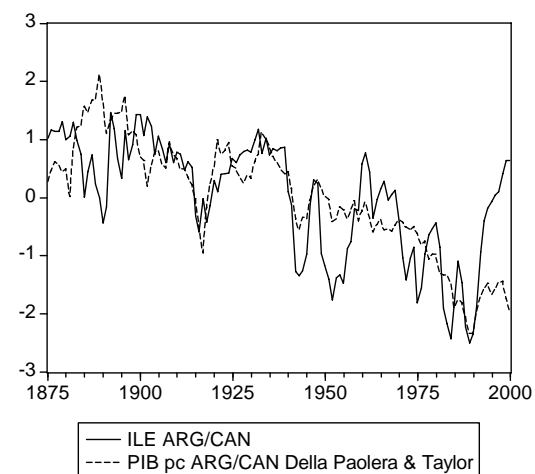
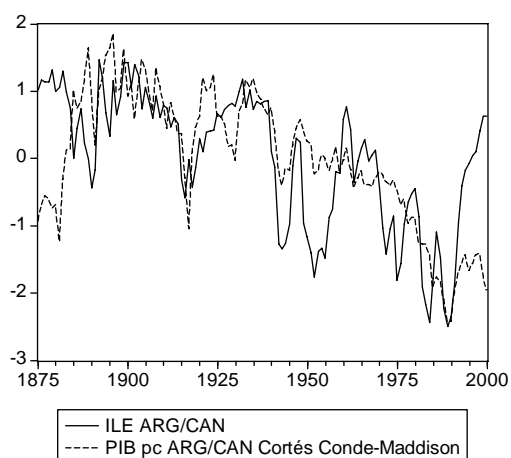
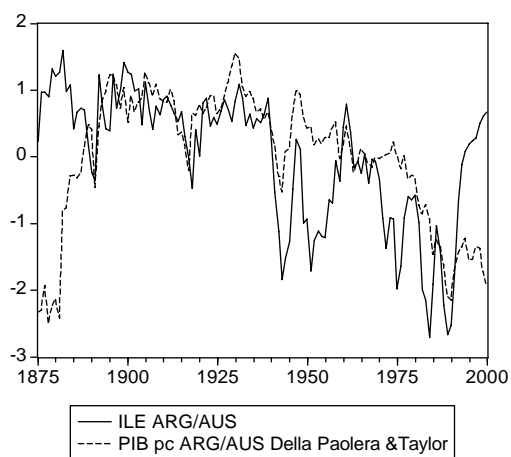
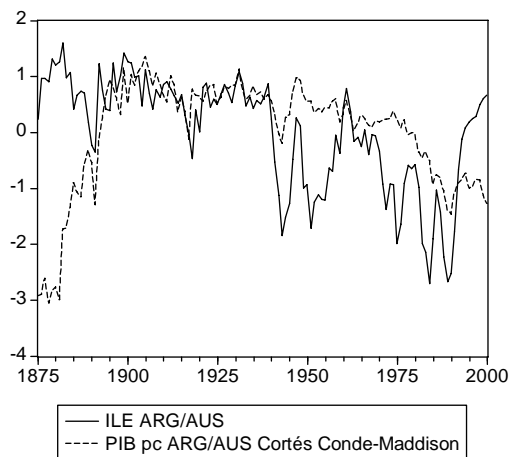


Table A3.1: Cointegración Analysis²⁶:**Argentina/Australia**

Series / Cointegración Test	Dickey-Fuller Augmented	Phillips-Perron
Maddison (1990)	-2.869*	-2.841*
Cortés Conde-Maddison (1913 y 1980)	-3.209*	-3.190*
Della Parlera y Taylor (1913 y 1980)	-3.420*	-3.405*

Argentina/Canadá

Series / Cointegration Test	Dickey-Fuller Augmented	Phillips-Perron
Maddison (1990)	-4.011*	-3.868*
Cortés Conde-Maddison (1913 y 1980)	-3.341*	-3.187*
Della Parlera y Taylor (1913 y 1980)	-3.316*	-3.378*

El símbolo * significa rechazo de la hipótesis nula al 1% de significatividad

²⁶ The causality tests are similar in the two cases. The results are at reader disposition upon request. Los análisis de causalidad resultan en los tres casos alternativos similares. The relative RIEFs have been taken with three and one lags for the comparative case of Argentina versus Australia and Canada respectively.

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